


Exhibit 8

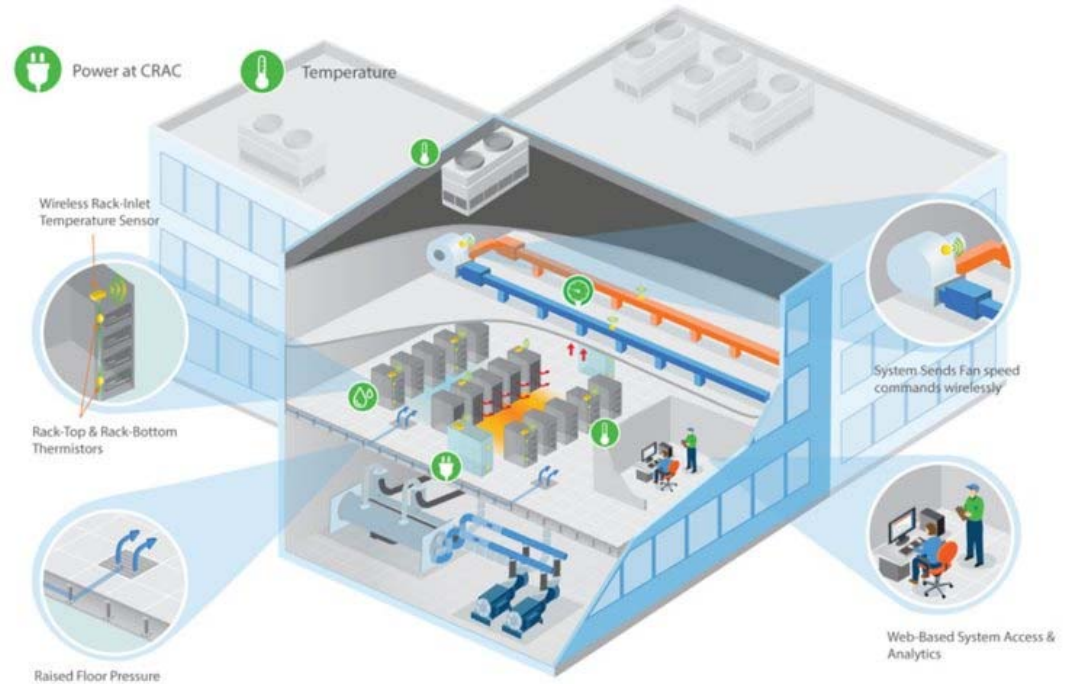
U.S. Patent No. 6,854,287 – Infringement Claim Chart

Claim 1	Exemplary Evidence of Infringement by Evoque
<p>[1pre] A method for cooling a room configured to house a plurality of computer systems, said method comprising:</p>	<p>Evoque’s data centers use a method for cooling a room configured to house a plurality of computer systems.</p> <p>For example, Evoque uses Vertiv (Liebert) cooling units in each colocation data center. Liebert cooling units are controlled by Liebert’s iCOM Intelligent Communication and Monitoring system.</p> <div data-bbox="768 545 2001 1240">A video frame showing a man in a grey shirt and glasses interacting with a control panel on a server rack. The panel has a small screen and buttons. The background shows a data center aisle with other server racks and overhead lighting. The video player interface at the bottom shows a progress bar at 1:43 / 3:23 and the text 'Customer Support >'.<p>https://www.youtube.com/watch?v=OmV1SFy5cEg at 1:43.</p><p>Evoque also, or alternatively, uses Vigilent’s dynamic cooling management which provides cooling to the server racks of a data center.</p></div>

Claim 1	Exemplary Evidence of Infringement by Evoque
	<p data-bbox="762 310 1944 391">Vigilent instruments the white floor with sensors that continuously monitor temperatures at the server rack. Data from hundreds or thousands of temperature sensors is constantly and wirelessly transmitted to local gateways that aggregate the data before sending it to the AI Engine, which controls the cooling infrastructure.</p> <p data-bbox="762 431 1944 513">The Vigilent system makes control decisions designed to eliminate hot spots while avoiding unnecessary overcooling; at the same time, cooling units are automatically managed under dynamic control to ensure that the most optimal choices of CRACs or CRAHs are made, reducing your energy spend.</p> <p data-bbox="762 573 1665 605">https://www.vigilent.com/who-we-serve/by-role/data-center-designer/.</p> <p data-bbox="1010 665 1501 698">Optimized airflow eliminates hot spots.</p> <p data-bbox="1010 719 1451 911">Vigilent continuously optimizes the airflow in your facility, delivering improved reliability and availability. The system automatically finds and eliminates hot spots, while its comprehensive reports and tools facilitate easier operations management.</p> <p data-bbox="762 935 1602 967">https://www.vigilent.com/who-we-serve/by-facility/data-centers/.</p>

Claim 1

Exemplary Evidence of Infringement by Evoque



Constantly adapting

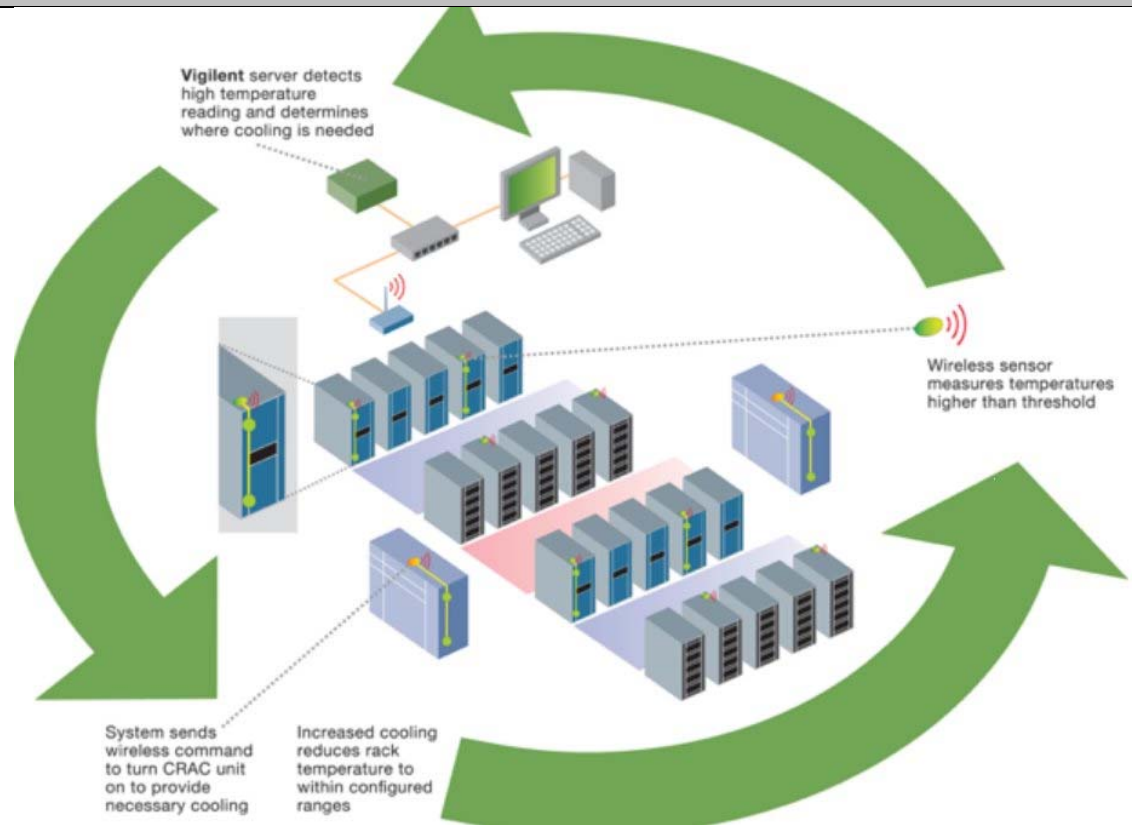
The AI engine constantly changes cooling when it detects new equipment and varying IT loads.

<https://www.vigilent.com/who-we-serve/by-facility/data-centers/>.

Claim 1	Exemplary Evidence of Infringement by Evoque
	<p data-bbox="779 321 1134 354">Granular control & visibility</p> <p data-bbox="779 358 1625 456">The Vigilent system provides you with rack-level visibility, and automatically controls cooling resources to ensure you're getting the right amount of cooling to the locations you care about most.</p> <p data-bbox="766 480 1665 513">https://www.vigilent.com/who-we-serve/by-role/data-center-operator/.</p> <p data-bbox="766 537 1921 610">Vigilent also detects high temperature readings and sends command to the cooling units to control the temperature.</p> <p data-bbox="1045 646 1501 699">DYNAMIC CONTROL</p> <p data-bbox="1045 724 1472 805">Automatic, real-time thermal management.</p> <p data-bbox="1045 829 1581 1097">The Vigilent Control System combines the temperature data gathered by the monitoring system with powerful machine learning. It automatically determines how to best adjust your facility's cooling resources – constantly and in real time – to match the current heat load, all while using the minimum amount of energy possible.</p> <p data-bbox="766 1105 1997 1138">https://www.vigilent.com/products-and-services/vigilent-dynamic-cooling-management-system/</p>


Claim 1

Exemplary Evidence of Infringement by Evoque



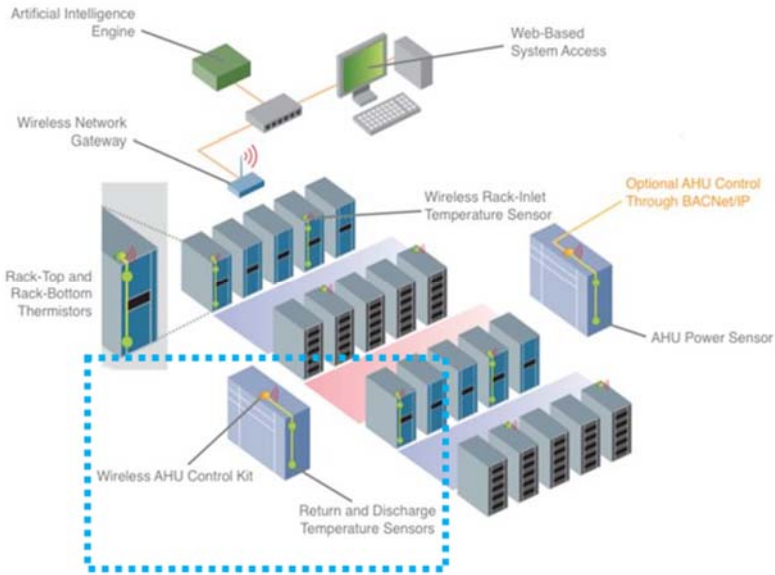
https://techcrunch.com/2012/03/26/vigilant-raises-6-7m-from-accel-for-intelligent-data-center-energy-management-system/?guccounter=1&guce_referrer=aHR0cHM6Ly93d3cuZ29vZ2x1LmNvbS8&guce_referrer_sig=AQAAAHN5ro4OJaRHQi5FRCMvqn2bp-tTxvWCI3YIbeLD

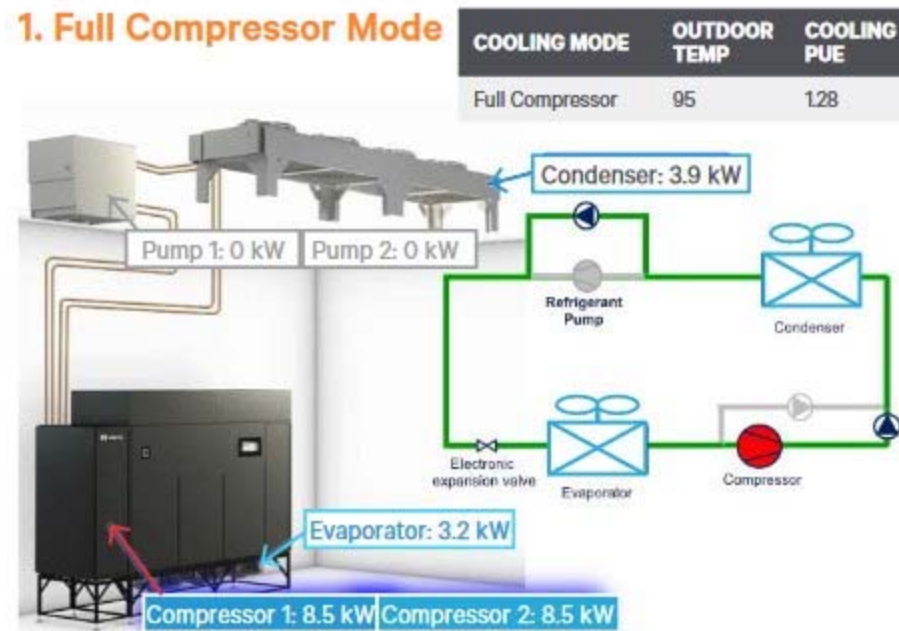
Claim 1	Exemplary Evidence of Infringement by Evoque
	<p>The Cooling Capacity Report builds on Intelligent Analytics™ technology to display the amount of available cooling at each site, room, and individual cooling unit, on demand. This information enables facility managers to more quickly identify where equipment or racks can be shifted to improve cooling capacity and to distinguish between hot spots caused by airflow issues and those that indicate a facility is running at maximum capacity. As a result, additional IT load can frequently be added without the need for more cooling resources.</p> <p>https://www.vigilent.com/vigilent-brings-active-cooling-capacity-planning-to-dcim/.</p>
[1a] providing a plurality of heat exchanger units configured to receive air from said room and to deliver air to said room;	<p>Evoque provides a plurality of heat exchanger units configured to receive air from said room and to deliver air to said room.</p> <p>For example, Evoque uses Liebert cooling units which are heat exchangers that receive air from the room and deliver cool conditioned air to the room by transferring heat from the air to a fluid.</p>

Claim 1	Exemplary Evidence of Infringement by Evoque
	<div data-bbox="766 261 2003 954">A video frame showing a man in a grey short-sleeved shirt and glasses interacting with a control panel on a server rack. The panel has a small screen and buttons. The background shows a server room with other racks and a doorway.</div> <p data-bbox="766 971 1541 1015">https://www.youtube.com/watch?v=OmV1SFy5cEg at 1:43.</p> <p data-bbox="766 1031 1984 1107">Vigilent's dynamic cooling management activates the cooling units, that deliver and receive air from the room, and measures the return and discharge air temperatures.</p>

Claim 1	Exemplary Evidence of Infringement by Evoque
	<p data-bbox="1052 321 1325 354">MONITOR STATUS</p> <p data-bbox="1052 370 1650 638">CRAC, CRAH, and AHU temperature sensors constantly measure the discharge and return air temperatures of your cooling equipment. This data is stored indefinitely to enable the detection of long-term trends.</p> <p data-bbox="768 683 1541 716">https://www.vigilent.com/products-and-services/monitoring/</p> <p data-bbox="800 748 1299 773">You can track different cooling unit variables, including:</p> <ul data-bbox="842 789 1892 1019" style="list-style-type: none"><li data-bbox="842 789 1850 813">• BOP is the control output, which is how the Vigilent system can adjust cooling units by turning them on or off<li data-bbox="842 829 1667 854">• Discharge Air is the temperature of air being supplied to the facility by the cooling unit<li data-bbox="842 870 1755 894">• Power Monitor will display the amount of power in kilowatts (kW) being used by that equipment<li data-bbox="842 911 1545 935">• Return Air is the temperature of the air coming back into the cooling unit<li data-bbox="842 967 1892 1019">• Return and Discharge Temperature Sensors – Measures the return air and discharge air temperature for each cooling unit <p data-bbox="768 1084 1850 1157">https://fccid.io/ANATEL/01612-15-08292/MANUAL/16006226-67DD-49FB-8873-2E15C3330211/PDF, pp. 2, 24.</p>

Claim 1	Exemplary Evidence of Infringement by Evoque
	<div data-bbox="947 310 1824 805" data-label="Diagram"> <p>The diagram, titled "IoT Architecture with Machine Learning" and branded with "SlidePlayer Vigilant", illustrates a system architecture. On the left, "Rack Sensors" (collecting temperature) and "Control Modules" (collecting cooling power and temperature data) are shown. These connect via "Gateways" (managing wireless communication) to a "Control" section containing an "AI Engine*" (aggregating data, learning, and issuing control commands). The AI Engine connects to "Prescriptive Analytics", which includes a "Data Engine" (analyzing cooling with predictive models) and an "Analytics UI" (providing "Insights to Action" to inform decision making). The final outcomes listed are: "Optimize Cooling Capacity", "Reduce Cooling Energy", and "Increase Cooling Reliability". A footnote states: "*AI Engine can be deployed in cloud or on site".</p> </div> <p>https://slideplayer.com/slide/12118919/</p>

Claim 1	Exemplary Evidence of Infringement by Evoque
	 <p>https://slideplayer.com/slide/12118919/.</p>
[1b] supplying said plurality of heat exchanger units with cooling fluid from an air conditioning unit;	<p>Evoque supplies said plurality of heat exchanger units with cooling fluid from an air conditioning unit.</p> <p>For example, Evoque uses Liebert's cooling units which have an evaporator. Refrigerant cooling fluid flows through heat exchanger coils in evaporator.</p>

Claim 1**Exemplary Evidence of Infringement by Evoque****1. Full Compressor Mode**

https://www.vertiv.com/49f1fd/globalassets/products/thermal-management/room-cooling/liebert-dse-sales-brochure-sl-18927_00.pdf

Evoque also, or alternatively, uses Liebert cooling units which have a chilled water control valve. Chilled water cooling fluid flows through heat exchanger coils in evaporator.

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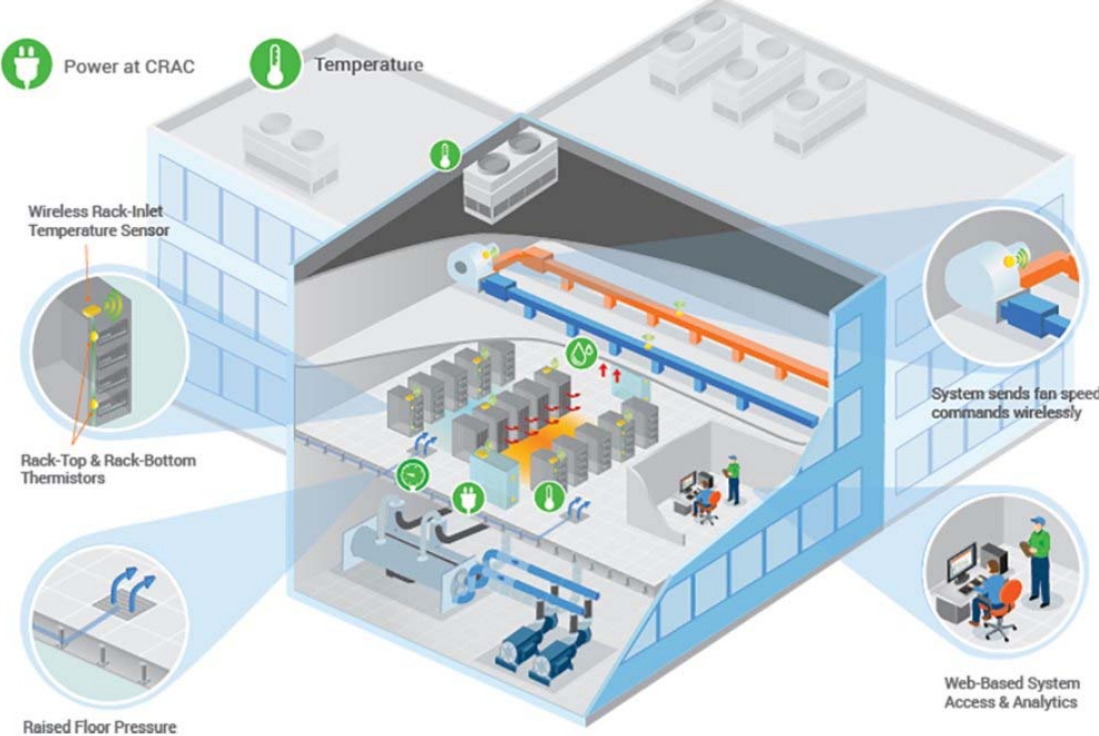
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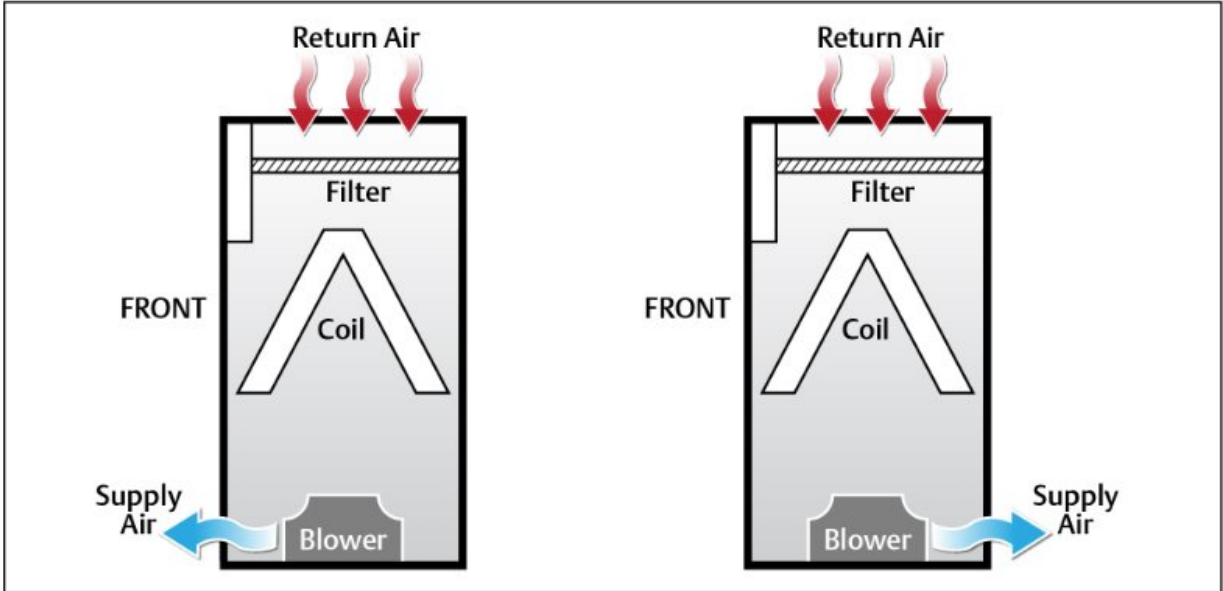
Chilled Water Control Valve

The chilled water valve provides proportional control action in response to room temperature and humidity as sensed by the microprocessor control. It includes operating linkage and electronic motor. Unlike other systems of this nature it requires no over-travel linkage or end switches to be adjusted. The control uses "intelligent logic" to eliminate valve hunting, thus greatly increasing the life of the valve. The valve can be a 3-way or 2-way to meet the appropriate requirements of the installed system.

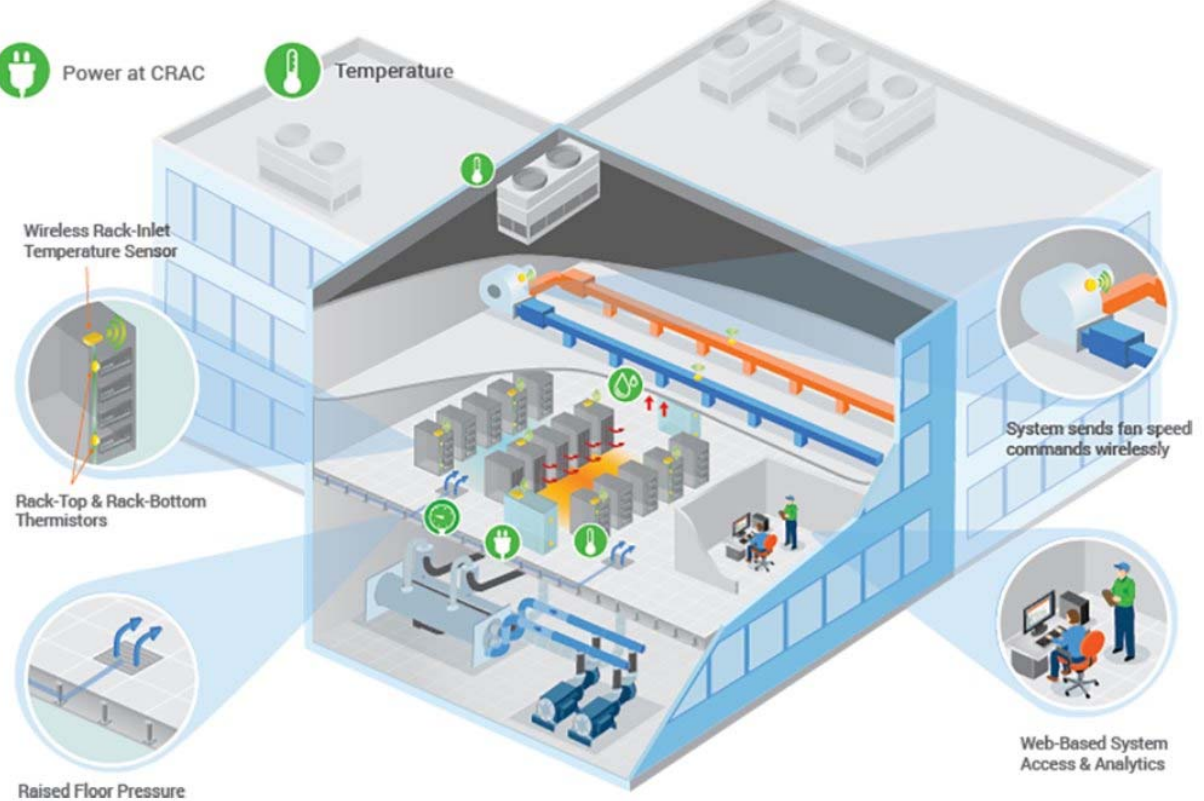


Claim 1	Exemplary Evidence of Infringement by Evoque
	<p data-bbox="766 261 1818 331">https://www.vertiv.com/491dda/globalassets/products/thermal-management/room-cooling/liebert-cw-brochure.pdf.</p> <p data-bbox="766 354 1965 461">Evoque also uses Vigilent's dynamic cooling management which supplies chilled water to the Computer Room Air Handler unit, CRAH (heat exchanger units) from a central chilled water plant.</p> <div data-bbox="1066 500 1583 987"><p data-bbox="1066 500 1583 636">Computer Room Air Conditioning unit. A standalone device sitting on the data center floor that provides cool air to the room via a fan. CRAC units usually have multiple local compressors and self-contained refrigerant as the cooling agent.</p><p data-bbox="1066 636 1136 659">CRAH</p><p data-bbox="1066 662 1583 799">Computer Room Air Handler unit. A standalone device sitting on the data center floor that provides cool air to the room via a fan. CRAH units typically use chilled water as the cooling agent that is supplied from a central chilled water plant in the facility.</p><p data-bbox="1066 799 1100 821">CT</p><p data-bbox="1066 824 1541 880">The Current Transducer (CT) is used with a power sensor to measure power of cooling units.</p><p data-bbox="1066 880 1108 902">CW</p><p data-bbox="1066 906 1583 987">Chilled Water unit. A type of CRAC unit that uses chilled water from a dedicated, onsite chiller plant to cool the discharge air.</p></div> <p data-bbox="766 993 1850 1058">https://fccid.io/ANATEL/01612-15-08292/MANUAL/16006226-67DD-49FB-8873-2E15C3330211/PDF, Page 153.</p>

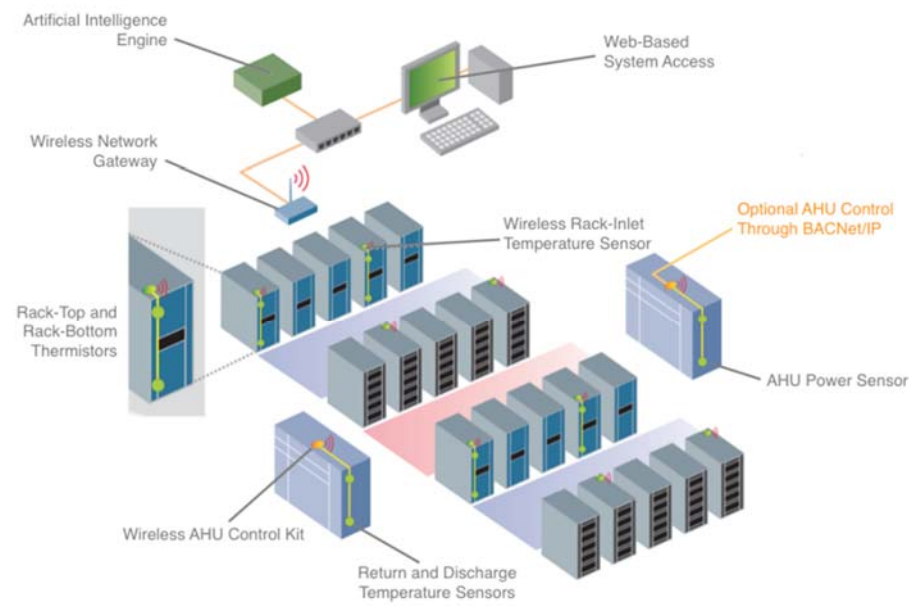
Claim 1	Exemplary Evidence of Infringement by Evoque
	 <p>The diagram illustrates a data center cooling system with the following components and features:</p> <ul style="list-style-type: none"> Power at CRAC: Indicated by a plug icon. Temperature: Indicated by a thermometer icon. Wireless Rack-Inlet Temperature Sensor: A circular inset showing a sensor on a rack. Rack-Top & Rack-Bottom Thermistors: A circular inset showing thermistors on a rack. Raised Floor Pressure: A circular inset showing air flow under a raised floor. System sends fan speed commands wirelessly: A circular inset showing a fan with a wireless signal. Web-Based System Access & Analytics: A circular inset showing a person at a computer. <p>https://www.vigilent.com/products-and-services/monitoring/.</p>
<p>[1c] cooling said received air through heat exchange with the cooling fluid in the plurality of heat exchanger units;</p>	<p>Evoque cools said received air through heat exchange with the cooling fluid in the plurality of heat exchanger units.</p> <p>For example, Evoque uses Liebert cooling units to cool fluid (refrigerant) through the coil. The cooling fluid through the coil is chilled water/glycol. Liebert cooling units receive the “return air” from the room and deliver cool conditioned “supply air” to the room, by transferring heat from the air to the cooling fluid within the coil.</p>

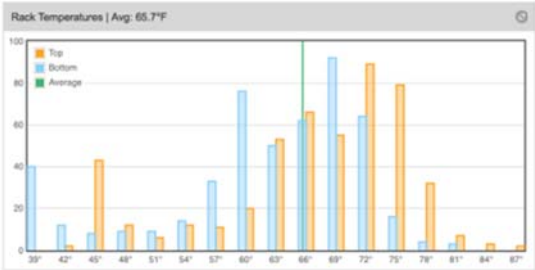
Claim 1	Exemplary Evidence of Infringement by Evoque
	 <p>The diagrams illustrate a room cooling system. On the left, 'Return Air' (indicated by red arrows) enters from the top, passes through a 'Filter', then a 'Coil' (labeled 'FRONT'), and finally through a 'Blower' at the bottom to become 'Supply Air' (indicated by a blue arrow). On the right, the same components are shown, but the 'Supply Air' is indicated by a blue arrow pointing to the right, suggesting a different distribution or return path. Both diagrams show a vertical cross-section of the system with a 'FRONT' label on the left side of the coil.</p> <p>https://www.vertiv.com/4afe7d/globalassets/products/thermal-management/room-cooling/liebert-dse-80-165kw-23-43-tons-downflow-system-design-manual.pdf, pp. 3, 6.</p>

Claim 1	Exemplary Evidence of Infringement by Evoque
	<p>Evoque also uses Vigilent's dynamic cooling management which supplies chilled water to the Computer Room Air Handler unit, CRAH (heat exchanger units) from a central chilled water plant.</p> <p>Computer Room Air Conditioning unit. A standalone device sitting on the data center floor that provides cool air to the room via a fan. CRAC units usually have multiple local compressors and self-contained refrigerant as the cooling agent.</p> <p>CRAH Computer Room Air Handler unit. A standalone device sitting on the data center floor that provides cool air to the room via a fan. CRAH units typically use chilled water as the cooling agent that is supplied from a central chilled water plant in the facility.</p> <p>CT The Current Transducer (CT) is used with a power sensor to measure power of cooling units.</p> <p>CW Chilled Water unit. A type of CRAC unit that uses chilled water from a dedicated, onsite chiller plant to cool the discharge air.</p> <p>https://fccid.io/ANATEL/01612-15-08292/MANUAL/16006226-67DD-49FB-8873-2E15C3330211/PDF, Page 153.</p>

Claim 1	Exemplary Evidence of Infringement by Evoque
	 <p>The diagram illustrates a data center environment with various monitoring and control systems. Callouts include: Power at CRAC, Temperature, Wireless Rack-Inlet Temperature Sensor, Rack-Top & Rack-Bottom Thermistors, Raised Floor Pressure, System sends fan speed commands wirelessly, and Web-Based System Access & Analytics.</p> <p>https://www.vigilent.com/products-and-services/monitoring/.</p>
[1d] sensing temperatures at one or more locations in said room;	<p>Evoque senses temperatures at one or more locations in said room.</p> <p>For example, Evoque uses Liebert cooling units and the Liebert cooling unit control system senses temperatures at the supply sensor, remote sensor, or return sensor locations.</p>

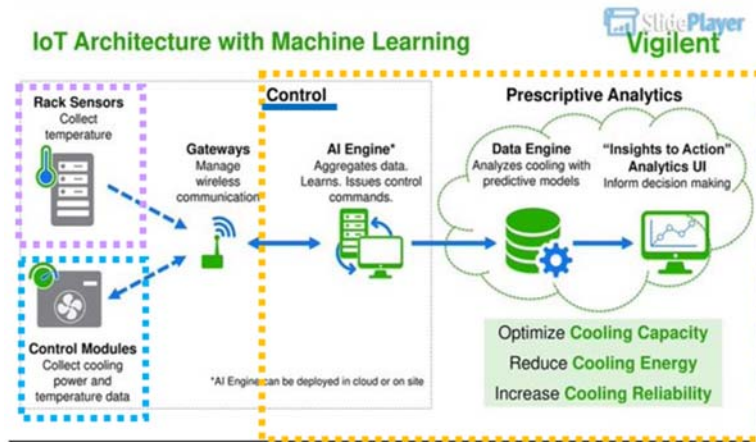
Claim 1	Exemplary Evidence of Infringement by Evoque																					
	<div>3.1.12 Automatic Fan Speed Control</div> <div>Temperature sensors can control fan speed using one of three modes based on the type of sensor selected as the fan-control sensor: supply, return, or remote, see Table 3.2 below . Control is based on the selected sensor for both fan control and temperature control and their setpoints as follows:</div> <div><ul style="list-style-type: none">• Coupled: The fan control and temperature control sensor selection is the same. When coupled, fan speed is determined by the temperature setpoints.• Decoupled: The fan control and temperature control sensor selection is different. When decoupled, fan speed is determined by the fan setpoints.</div> <div>Table 3.2 Fan Speed Controlling Sensor Options</div> <div><table><tr><th colspan="2" rowspan="2"></th><th colspan="3">Temperature Control Sensor Selected</th></tr><tr><th>Supply Sensor</th><th>Remote Sensor</th><th>Return Sensor</th></tr><tr><td rowspan="3">Fan Control Sensor Selected</td><td>Supply Sensor</td><td>Coupled</td><td>N/A</td><td>N/A</td></tr><tr><td>Remote Sensor</td><td>Decoupled (Recommended)</td><td>Coupled</td><td>N/A</td></tr><tr><td>Return Sensor</td><td>Decoupled</td><td>Decoupled</td><td>Coupled</td></tr></table></div> <div>https://www.vertiv.com/49b8b2/globalassets/shared/liebert-icom-user-manual_sl-31075.pdf, p. 45.</div> <div>Evoque also uses Vigilent’s dynamic cooling management which reads rack sensors (deployed on the plurality of server racks) configured to measure inlet and outlet temperatures across the data center.</div>			Temperature Control Sensor Selected			Supply Sensor	Remote Sensor	Return Sensor	Fan Control Sensor Selected	Supply Sensor	Coupled	N/A	N/A	Remote Sensor	Decoupled (Recommended)	Coupled	N/A	Return Sensor	Decoupled	Decoupled	Coupled
				Temperature Control Sensor Selected																		
		Supply Sensor	Remote Sensor	Return Sensor																		
Fan Control Sensor Selected	Supply Sensor	Coupled	N/A	N/A																		
	Remote Sensor	Decoupled (Recommended)	Coupled	N/A																		
	Return Sensor	Decoupled	Decoupled	Coupled																		

Claim 1	Exemplary Evidence of Infringement by Evoque
	<p>Wireless Rack-Inlet Temperature Sensor – Wireless sensor that measures temperature at the top and bottom of the rack inlet.</p> <p>Rack-Top and Rack-Bottom thermistors – Attached via a cable sleeve, these are the physical monitoring points for each temperature sensor.</p> <p>https://fccid.io/ANATEL/01612-15-08292/MANUAL/16006226-67DD-49FB-8873-2E15C3330211/PDF, p. 2.</p>  <p>The diagram illustrates a server room monitoring system. At the top, an 'Artificial Intelligence Engine' (green box) is connected to a 'Web-Based System Access' (computer monitor and keyboard). A 'Wireless Network Gateway' (router) is connected to the AI engine and the web access. The gateway is also connected to a 'Wireless Rack-Inlet Temperature Sensor' (blue box) and a 'Wireless AHU Control Kit' (blue box). The 'Wireless Rack-Inlet Temperature Sensor' is connected to 'Rack-Top and Rack-Bottom Thermistors' (yellow dots) on a server rack. The 'Wireless AHU Control Kit' is connected to 'Return and Discharge Temperature Sensors' (yellow dots) on an AHU. An 'AHU Power Sensor' (yellow dot) is also shown. An 'Optional AHU Control Through BACNet/IP' (orange text) is indicated. The server room is represented by a grid of server racks and AHUs.</p> <p>https://fccid.io/ANATEL/01612-15-08292/MANUAL/16006226-67DD-49FB-8873-2E15C3330211/PDF, p. 1.</p>

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	<div><table border="1"><caption>Rack Temperatures Avg: 65.7°F</caption><thead><tr><th>Rack Number</th><th>Top (°F)</th><th>Bottom (°F)</th><th>Average (°F)</th></tr></thead><tbody><tr><td>39</td><td>40</td><td>10</td><td>25</td></tr><tr><td>42</td><td>10</td><td>10</td><td>10</td></tr><tr><td>45</td><td>45</td><td>10</td><td>27.5</td></tr><tr><td>48</td><td>10</td><td>10</td><td>10</td></tr><tr><td>51</td><td>10</td><td>10</td><td>10</td></tr><tr><td>54</td><td>10</td><td>10</td><td>10</td></tr><tr><td>57</td><td>10</td><td>10</td><td>10</td></tr><tr><td>60</td><td>10</td><td>10</td><td>10</td></tr><tr><td>63</td><td>55</td><td>55</td><td>55</td></tr><tr><td>66</td><td>65</td><td>65</td><td>65</td></tr><tr><td>69</td><td>65</td><td>65</td><td>65</td></tr><tr><td>72</td><td>90</td><td>65</td><td>77.5</td></tr><tr><td>75</td><td>80</td><td>15</td><td>47.5</td></tr><tr><td>78</td><td>30</td><td>10</td><td>20</td></tr><tr><td>81</td><td>10</td><td>10</td><td>10</td></tr><tr><td>84</td><td>10</td><td>10</td><td>10</td></tr><tr><td>87</td><td>10</td><td>10</td><td>10</td></tr></tbody></table></div> <p>https://fccid.io/ANATEL/01612-15-08292/MANUAL/16006226-67DD-49FB-8873-2E15C3330211/PDF, p. 4.</p> <h3>Wireless Sensors</h3> <p>Wireless sensors are typically deployed every third rack to measure the inlet air temperature every minute. The sensors have two thermistors, one to capture temperature at rack bottom, the other at rack top.</p> <p>Wireless sensors are also used to monitor return and supply air temperature, and the power consumed, by each cooling unit. Sensors are also available to measure other environmental conditions, namely pressure and humidity.</p> <p>The sensors are based on advanced mesh networking technology, which allows each node to be both a source and repeater for other nodes, allowing the network to automatically self-configure and be resilient to intermittent outages or changes in site layout.</p> <p>https://www.vigilent.com/technology/system-architecture/</p>	Rack Number	Top (°F)	Bottom (°F)	Average (°F)	39	40	10	25	42	10	10	10	45	45	10	27.5	48	10	10	10	51	10	10	10	54	10	10	10	57	10	10	10	60	10	10	10	63	55	55	55	66	65	65	65	69	65	65	65	72	90	65	77.5	75	80	15	47.5	78	30	10	20	81	10	10	10	84	10	10	10	87	10	10	10
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[1e] controlling at least one of the temperature of said cooling fluid and said air delivery by said plurality of heat exchanger units to said room in response to said sensed temperatures at said one or more locations; and	<p>Evoque controls at least one of the temperature of said cooling fluid and said air delivery by said plurality of heat exchanger units to said room in response to said sensed temperatures at said one or more locations.</p> <p>For example, Evoque uses Liebert cooling units which have temperate sensors that control fan speed in response to sensed temperatures.</p> <p>3.1.12 Automatic Fan Speed Control</p> <p><u>Temperature sensors can control fan speed</u> using one of three modes based on the type of sensor selected as the fan-control sensor: supply, return, or remote, see Table 3.2 below . Control is based on the selected sensor for both fan control and temperature control and their setpoints as follows:</p> <ul style="list-style-type: none">• Coupled: The fan control and temperature control sensor selection is the same. When coupled, fan speed is determined by the temperature setpoints.• Decoupled: The fan control and temperature control sensor selection is different. When decoupled, fan speed is determined by the fan setpoints. <p>Table 3.2 Fan Speed Controlling Sensor Options</p> <table><tr><th colspan="2" rowspan="2"></th><th colspan="3">Temperature Control Sensor Selected</th></tr><tr><th>Supply Sensor</th><th>Remote Sensor</th><th>Return Sensor</th></tr><tr><td rowspan="3">Fan Control Sensor Selected</td><td>Supply Sensor</td><td>Coupled</td><td>N/A</td><td>N/A</td></tr><tr><td>Remote Sensor</td><td>Decoupled (Recommended)</td><td>Coupled</td><td>N/A</td></tr><tr><td>Return Sensor</td><td>Decoupled</td><td>Decoupled</td><td>Coupled</td></tr></table> <p>https://www.vertiv.com/49b8b2/globalassets/shared/liebert-icom-user-manual_sl-31075.pdf, p. 45.</p> <p>The Liebert cooling unit controls activates the flow of chilled water/glycol, and varies cooling capacity by adjusting a motorized ball valve.</p>			Temperature Control Sensor Selected			Supply Sensor	Remote Sensor	Return Sensor	Fan Control Sensor Selected	Supply Sensor	Coupled	N/A	N/A	Remote Sensor	Decoupled (Recommended)	Coupled	N/A	Return Sensor	Decoupled	Decoupled	Coupled
				Temperature Control Sensor Selected																		
		Supply Sensor	Remote Sensor	Return Sensor																		
Fan Control Sensor Selected	Supply Sensor	Coupled	N/A	N/A																		
	Remote Sensor	Decoupled (Recommended)	Coupled	N/A																		
	Return Sensor	Decoupled	Decoupled	Coupled																		

Claim 1	Exemplary Evidence of Infringement by Evoque
	<p data-bbox="863 326 1392 350">7.1.4 Temperature Control with a Fluid Economizer</p> <p data-bbox="863 375 1724 440">When an economizer is installed, the cooling requirement (determined by the temperature proportional band) is addressed first by the economizer's secondary cooling, if the economizer cooling capacity is insufficient, the compressor(s) begin cooling to bring the room air temperature down to the temperature setpoint.</p> <p data-bbox="863 456 1675 500">The fluid economizer employs a motorized ball valve that controls the flow of chilled water/glycol to provide a cooling capacity from 0% to 100%.</p> <p data-bbox="768 574 1976 639">https://www.vertiv.com/49b8b2/globalassets/shared/liebert-icom-user-manual_sl-31075.pdf, p. 110.</p> <p data-bbox="768 672 1986 737">Evoque also uses Vigilent's dynamic cooling management to generate an airflow for an optimal cooling output using the CRAH unit based on the temperature of the rack sensors.</p> <p data-bbox="957 777 1035 802">RWT</p> <p data-bbox="957 818 1734 894">Return water temperature. Measured temperature of the chilled water loop returning to the chiller.</p> <p data-bbox="957 902 978 927">S</p> <p data-bbox="957 943 1020 967">SAT</p> <p data-bbox="957 984 1749 1097">Supply Air Temperature. Measured temperature of the air leaving an AHU that is being supplied to the building zones.</p>

Claim 1	Exemplary Evidence of Infringement by Evoque
	<p>Computer Room Air Conditioning unit. A standalone device sitting on the data center floor that provides cool air to the room via a fan. CRAC units usually have multiple local compressors and self-contained refrigerant as the cooling agent.</p> <p>CRAH</p> <p>Computer Room Air Handler unit. A standalone device sitting on the data center floor that provides cool air to the room via a fan. CRAH units typically use chilled water as the cooling agent that is supplied from a central chilled water plant in the facility.</p> <p>https://fccid.io/ANATEL/01612-15-08292/MANUAL/16006226-67DD-49FB-8873-2E15C3330211/PDF, pp. 157, 158</p>  <p>The diagram, titled "IoT Architecture with Machine Learning" and "Vigilent", illustrates a data center cooling optimization system. It is divided into three main functional areas: <ul style="list-style-type: none"> Sensors and Data Collection: Includes "Rack Sensors" (collecting temperature) and "Control Modules" (collecting cooling power and temperature data). Communication: "Gateways" manage wireless communication between the sensors/modules and the control system. Control and Analytics: The "AI Engine" aggregates data, learns, and issues control commands. This feeds into "Prescriptive Analytics", which includes a "Data Engine" (analyzing cooling with predictive models) and an "Analytics UI" (providing insights to inform decision making). The final outcomes of the system are: "Optimize Cooling Capacity", "Reduce Cooling Energy", and "Increase Cooling Reliability". A note at the bottom states: "*AI Engine can be deployed in cloud or on site".</p> <p>https://slideplayer.com/slide/12118919/</p>

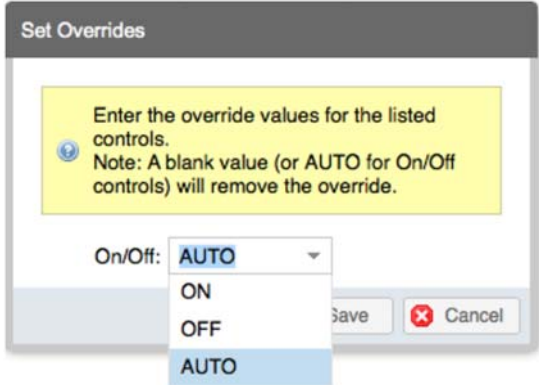
Claim 1	Exemplary Evidence of Infringement by Evoque
	<p>Using wireless temperature sensors, the system collects granular information about the thermal environment of your facility. Temperature sensors are placed every three to four racks measuring temperature at the top and bottom of the rack. Thermal data is communicated via a wireless mesh network back to the control software.</p> <p>The AI control software uses the real-time thermal data to learn and build an airflow model of the environment. The model is used to determine the optimal cooling output to ensure that the thermal environment is maintained with a minimal amount of energy.</p> <p>The software then makes active control decisions for each cooling unit. The <u>Data Center Control</u> section provides more detail on the different control capabilities of the system. The real-time temperature monitoring provides thermal feedback as the software begins to control the environment. This constant monitoring and control response occurs automatically and dynamically to optimize your thermal environment.</p> <p>https://fccid.io/ANATEL/01612-15-08292/MANUAL/16006226-67DD-49FB-8873-2E15C3330211/PDF, pp. 102, 103.</p>
<p>[1f] wherein the step of controlling said air delivery by said plurality of heat exchanger units comprises individually manipulating a mass flow rate of the cooling fluid supplied to each of the plurality of heat exchanger units.</p>	<p>Evoque controls said air delivery by said plurality of heat exchanger units comprises individually manipulating a mass flow rate of the cooling fluid supplied to each of the plurality of heat exchanger units.</p> <p>For example, Evoque uses Liebert cooling units which have Teamwork mode. Teamwork mode evaluates changes in the air temperature of the inlet, outlet, or supply temperature of the heat dissipating devices and adjusts one or more cooling units controls to provide the required cooling capacity.</p>

Claim 1	Exemplary Evidence of Infringement by Evoque
	<p data-bbox="783 313 1902 362">6 Teamwork, Standby and Rotation for Cooling Units</p> <p data-bbox="783 402 1959 464">U2U communication via private network and additional hardware (see U2U Networking on page 95) allows the following operating features for the cooling units:</p> <ul data-bbox="867 488 1098 597" style="list-style-type: none"><li data-bbox="867 488 1014 516">• Teamwork<li data-bbox="867 529 1098 557">• Standby (Rotation)<li data-bbox="867 570 993 597">• Cascade <p data-bbox="766 686 1980 756">https://www.vertiv.com/49b8b2/globalassets/shared/liebert-icom-user-manual_sl-31075.pdf, p. 99.</p>

Claim 1	Exemplary Evidence of Infringement by Evoque
	<p>6.2.3 Teamwork Mode 1—Parallel Operation</p> <p>In Teamwork mode 1, fan speed and cooling capacity are ramped up in parallel, which means that all units operate identically.</p> <p>Teamwork mode 1 is best for small rooms with balanced heat loads. A master unit collects the controlling readings for temperature and humidity from all the operating (fan on) units in the group, then determines the average or worst-case reading, and sends operating instructions to efficiently distribute cooling capacity across available units.</p> <p>In Teamwork mode 1, most parameters are shared and, when set in any unit, are set in all units in the group.</p> <p>6.2.4 Teamwork Mode 2—Independent Operation</p> <p>Teamwork mode 2 works well for most applications, and best in large rooms with un-balanced heat loads by preventing units in a group from operating in opposing modes, some cooling and some heating. All temperature and humidity parameters are shared by the group. The master unit monitors all available unit-sensor readings and determines the demand for cooling, heating, humidification and dehumidification, then sends operating instructions to address the greatest demand.</p> <p>In Teamwork mode 2, the setpoints for all units must be identical. The proportional band, deadband, and related settings may differ by unit. Fan speed is modulated per unit. Rotation and cascading is not available, so expect uneven distribution of work hours.</p> <p>6.2.5 Teamwork Mode 3—Optimized Aisle Operation</p> <p>In Teamwork Mode 3, the fan speed for all units operates in parallel, which means fan speed operation is identical at each unit. However, cooling capacity operates independently for each unit.</p> <p>Teamwork mode 3 takes advantage of variable speed fan options and variable capacity component options to maintain rooms with an unbalanced load and to prevent units in a group from operating in opposing modes. All units operate in the same mode based on the average or worst case (maximum) readings from the unit sensors. A local control (cooling capacity supply sensor) provides input to manage and maintain the discharge-air temperature at each unit. In addition, fan speed and operation are controlled based on readings from the unit temperature or static pressure sensors to control air delivery to the cold aisle.</p> <p>https://www.vertiv.com/49b8b2/globalassets/shared/liebert-icom-user-manual_sl-31075.pdf, p. 102.</p>

Claim 1	Exemplary Evidence of Infringement by Evoque
	<p>The Liebert cooling units also have standby mode. Standby mode evaluates changes in the air temperature of the inlet, outlet, or supply temperature of the heat dissipating devices and activates/de-activates one or more cooling units to provide the required cooling capacity.</p> <p>6.3 Assigning Cooling Units to Standby (Lead/Lag)</p> <p>Standby assigns some units to operate while others are on standby, meaning a unit is idle but ready to become active in the event of an alarm condition in one of the operating units or based on a rotation schedule.</p> <p>When a unit is in standby mode, fan(s) are off and no cooling occurs. In multiple cooling unit systems, assigning units to standby lets you:</p> <ul style="list-style-type: none"> • Configure redundancy in case of failure scenarios (standby). • Manage cooling unit run time (lead/lag). See Setting a Rotation Schedule on the next page . • <u>Modulate for very low loads to full design load (to be temperature reactive) by cascading activation of standby units (configured when setting up teamwork mode).</u> <p>https://www.vertiv.com/49b8b2/globalassets/shared/liebert-icom-user-manual_sl-31075.pdf, p. 103.</p> <p>Evoque also uses Vigilent's dynamic cooling management to control the water flow supplied to each cooling unit automatically based on the measured temperature.</p> <p>CRAH Computer Room Air Handler unit. A standalone device sitting on the data center floor that provides cool air to the room via a fan. CRAH units typically use chilled water as the cooling agent that is supplied from a central chilled water plant in the facility.</p> <p>WtrFlow Measured volumetric water flow rate.</p>

Claim 1	Exemplary Evidence of Infringement by Evoque
	<p data-bbox="764 261 1850 331">https://fccid.io/ANATEL/01612-15-08292/MANUAL/16006226-67DD-49FB-8873-2E15C3330211/PDF, p. 153.</p> <p data-bbox="787 367 1986 451">Using wireless temperature sensors, the system collects granular information about the thermal environment of your facility. Temperature sensors are placed every three to four racks measuring temperature at the top and bottom of the rack. Thermal data is communicated via a wireless mesh network back to the control software.</p> <p data-bbox="787 477 1986 561">The AI control software uses the real-time thermal data to learn and build an airflow model of the environment. The model is used to determine the optimal cooling output to ensure that the thermal environment is maintained with a minimal amount of energy.</p> <p data-bbox="787 586 1986 698">The software then makes active control decisions for each cooling unit. The Data Center Control section provides more detail on the different control capabilities of the system. The real-time temperature monitoring provides thermal feedback as the software begins to control the environment. This constant monitoring and control response occurs automatically and dynamically to optimize your thermal environment.</p> <p data-bbox="764 764 1850 834">https://fccid.io/ANATEL/01612-15-08292/MANUAL/16006226-67DD-49FB-8873-2E15C3330211/PDF, pp. 102, 103.</p> <p data-bbox="793 875 1360 899">How does the software control each cooling unit?</p> <p data-bbox="793 924 1986 1040">There are many differences in how a cooling unit can be controlled. Some units can only be turned ON and OFF. Some have Variable Frequency Drives (VFDs) for fan speed control, and others have been retrofitted with EC Plug Fans, which also have fan speed control. The Vigilent System is designed to work with all of these units and even a mix of different types.</p> <p data-bbox="793 1065 2003 1149">The Vigilent system controls the HVAC equipment to keep each zone temperature within its set point, configured by the user in the Set Points tab, while reducing airflow energy. The reduced airflow conserves energy by reducing fan power and putting less demand on chiller plants and boilers.</p> <p data-bbox="764 1174 1850 1243">https://fccid.io/ANATEL/01612-15-08292/MANUAL/16006226-67DD-49FB-8873-2E15C3330211/PDF, pp. 104, 107.</p>

Claim 1	Exemplary Evidence of Infringement by Evoque
	<div data-bbox="968 280 1503 662"></div> <ul style="list-style-type: none">• AUTO means the Vigilent system is in control of this unit and will turn the unit on or off automatically as necessary.• ON will turn the unit on, and disables the ability of the Vigilent system to control this unit. It will remain on until this override is removed.• OFF will turn the unit off, and disables the ability of the Vigilent system to control this unit. It will remain off until this override is removed. <p>https://fccid.io/ANATEL/01612-15-08292/MANUAL/16006226-67DD-49FB-8873-2E15C3330211/PDF, p. 47.</p>